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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,155	01/14/2002	Matthew Thomas Mayer	RCA 89656	8661

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EXAMINER

TRAN, TRANG U

ART UNIT PAPER NUMBER

2614

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/031,155

Applicant(s)

MAYER, MATTHEW THOMAS

Examiner

Trang U. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 26, 2006 has been entered.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Badger et al. (US Patent No. 5,739,874) in view of Shin (US Patent No. 6,108,044).

In considering claim 1, Badger et al discloses all the claimed subject matter, note 1) the claimed a television receiver for receiving a digital television signal susceptible to inference caused by a lower adjacent analog television signal is met by the digital

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satellite television system (Fig. 1), 2) the claimed a tuner for receiving the digital signal associated with a broadcast channel selected from a plurality of channel locations in a frequency band is met by the outdoor unit 5 and the tunable bandpass filter 907 which selects the desired RF signal and rejects unwanted RF signals (Fig. 1, col. 4, line 33 to col. 5, line 23), 3) the claimed a frequency conversion stage, coupled to said tuner, for converting in frequency the digital signal to an intermediate frequency (IF) signal to be output, where the center frequency of said IF signal is capable of being switched to a nominal frequency corresponding to the selected broadcast channel or to a second frequency being shifted from said nominal frequency in accordance with the presence or absence of said interference determined by said determining means is met by **the mixer 909, the local oscillator (LO) 911** which is coupled to a second input of mixer 909 and the frequency of LO 911 is controlled by a **phase locked loop (PLL) arrangement 919** comprising a PLL integrated circuit (IC) 921, the terrestrial tuning PLLs are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20), and 4) the claimed a filter, coupled to said frequency conversion stage, said filter having a center frequency equal to said nominal frequency is met by **the IF SAW filter 915** which has a center frequency at 140 MHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

However, Badger et al explicitly do not disclose: the claimed means for determining the presence of said interference, and the filter, coupled to said frequency

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conversion stage, attenuates adjacent signals and wherein the lower adjacent analog signal is further attenuated by said filter upon switching of the center frequency of IF signal to said second frequency.

Shin teaches that an HDTV demodulator 204 demodulates an HDTV signal in the signal output by the tuner 202, an NTSC interference canceler 206 cancels the modulation carrier of the NTSC signal existing in the output of the HDTV demodulator 204, and outputs a **detection signal (NRF-sel) indicating whether the NTSC signal exists in the HDTV signal**... and the comb filter 220 has several frequency notches in a band of a 6 MHz HDTV signal as shown in Fig. 4, since the modulation carriers, that is a visual carrier, a chrominance subcarrier and an aural carrier, are located near the frequency notches of the comb filter 220, the energy of the NTSC signal passed through the comb filter 220 is significantly reduced (Fig. 2, col. 3, line 15 to col. 4, line 46).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the detecting the present of interference and **the comb filter** which rejects the frequency modulated sound carrier of any co-channel interfering analog signal as taught by Shin into Badger et al's system in order to increase the quality of the received video program by suppressing co-channel interference from analog television signals.

In considering claim 3, Badger et al discloses all the claimed subject matter, note 1) the claimed wherein said frequency conversion stage comprises: a local oscillator for generating a local oscillation signal is met by **the local oscillator (LO) 911** (Fig. 1, col. 5, line 15 to col. 8, line 20), 2) the claimed a phase-locked loop, coupled to said local

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oscillator, for controlling the frequency of said local oscillation signal is met by **the PLL IC 921** (Fig. 1, col. 5, line 15 to col. 8, line 20), 3) the claimed a mixer, coupled to said local oscillator, for heterodyning the digital signal with said local oscillation signal to generate said IF signal is met by **the mixer 909** (Fig. 1, col. 5, line 15 to col. 8, line 20), and 4) the claimed an IF filter, coupled to said mixer, for passing the lower band of said IF signal is met by **the IF SAW filter 915** which has a center frequency at 140 mHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

In considering claim 4, the claimed wherein said second frequency is said nominal frequency shifted upward by 62.5 kHz is met by the terrestrial tuning PLL ICs are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20 of Badger et al).

In considering claim 5, Badger et al discloses all the claimed subject matter, note 1) the claimed a method of receiving a digital television signal susceptible to interference caused by a lower adjacent analog television signal is met by the digital satellite television system (Fig. 1), 2) the claimed tuning a radio frequency (RF) signal having a digital signal inband and a lower adjacent analog signal is met by the outdoor unit 5 and the tunable bandpass filter 907 which selects the desired RF signal and rejects unwanted RF signals (Fig. 1, col. 4, line 33 to col. 5, line 23), 3) the claim offsetting the frequency of a local oscillator (LO) signal upon determination of the

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presence of said interference is met by changing the frequency of the LO signal in relatively large incremental frequency steps, e.g., 62.5 kHz (Fig. 1, col. 5, line 15 to col. 8, line 20), 4) the claimed heterodyning said RF signal with said LO signal to generate a modified intermediate frequency (IF) signal having a frequency offset from nominal and within the passband of a filter is met by **the mixer 909, the local oscillator (LO) 911** which is coupled to a second input of mixer 909 and the frequency of LO 911 is controlled by a **phase locked loop (PLL) arrangement 919** comprising a PLL integrated circuit (IC) 921, the terrestrial tuning PLL ICs are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20), and 5) the claimed filtering said modified IF signal is met by **the IF SAW filter 915** which has a center frequency at 140 MHz equal to said nominal frequency and reduce inter-symbol interference (Fig. 1, col. 6, line 12 to col. 8, line 20).

However, Badger et al explicitly do not disclose the claimed determining the presence of said interference, filtering said modified IF signal to attenuate said lower adjacent analog signal.

Shin teaches that an HDTV demodulator 204 demodulates an HDTV signal in the signal output by the tuner 202, an NTSC interference canceler 206 cancels the modulation carrier of the NTSC signal existing in the output of the HDTV demodulator 204, and outputs a **detection signal (NRF-sel) indicating whether the NTSC signal exists in the HDTV signal...** and the comb filter 220 has several frequency notches in

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a band of a 6 MHz HDTV signal as shown in Fig. 4, since the modulation carriers, that is a visual carrier, a chrominance subcarrier and an aural carrier, are located near the frequency notches of the comb filter 220, the energy of the NTSC signal passed through the comb filter 220 is significantly reduced (Fig. 2, col. 3, line 15 to col. 4, line 46).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the detecting the present of interference and **the comb filter** which rejects the frequency modulated sound carrier of any co-channel interfering analog signal as taught by Shin into Badger et al's system in order to increase the quality of the received video program by suppressing co-channel interference form analog television signals.

In considering claim 6, the claimed wherein offsetting the frequency of said LO signal comprises shifting the frequency of said LO signal upward by 62.5 kHz is met by the terrestrial tuning PLL ICs are capable of changing the frequency of the LO signal only in relatively large incremental frequency steps, e.g., 62.5 kHz, as the result, the frequency of the carrier of the IF signal will change in the same relatively large steps (Fig. 1, col. 5, line 15 to col. 8, line 20 of Badger et al).

In considering claim 7, the claimed further comprising: an AGC circuit indicative of the power of the digital television signal, wherein the determining means determines the presence of the interference based on a comparison of said power with the power of the lower adjacent analog signal is met by the minimum energy detector 246 which compares the values along the two paths to select the path having a smaller energy and outputting the detecting signal (Fig. 2, col. 4, lines 29-40 of Shin).



***Allowable Subject Matter***

5. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 identifies the distinct features: “where said microprocessor, in response to the absence of a lower analog signal adjacent to the digital signal, causes the center frequency of said IF signal to be switched to said nominal frequency; and said microprocessor, in response to the presence of a lower analog signal adjacent to the digital signal, causes the center frequency of said IF signal to be switched to said second frequency”. The closest prior art, Badger et al. (US Patent No. 5,739,874) and Limberg (US Patent No. 5,748,226), either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

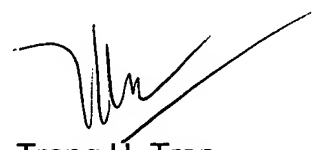
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT  
March 17, 2006



Trang U. Tran  
Examiner  
Art Unit 2614